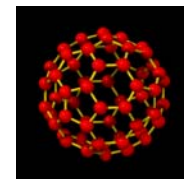
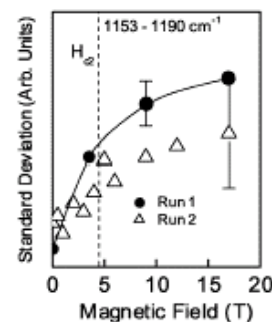
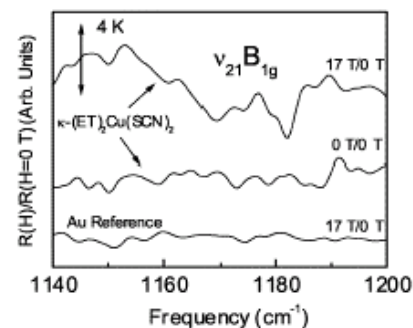
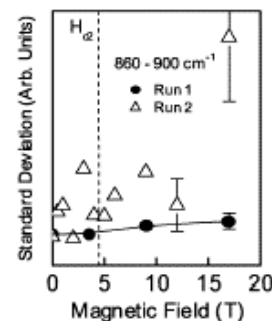
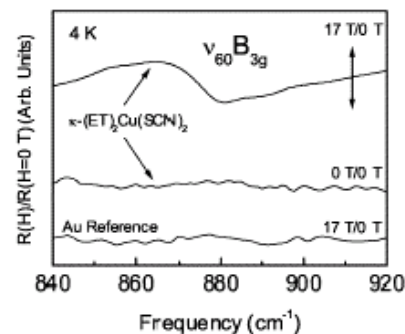
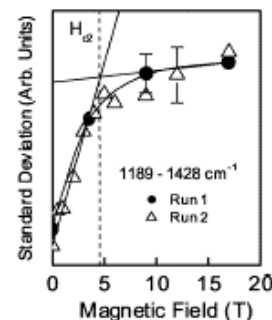
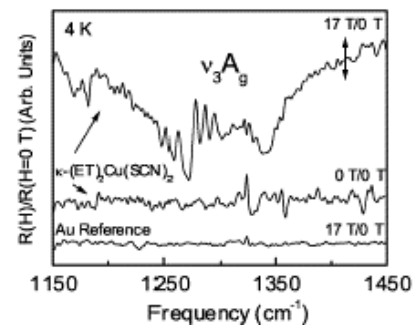


Chemical Structure / Physical Property Relationships in Layered Organic Solids as Investigated by Infrared Spectroscopy

J.L. Musfeldt, University of Tennessee, DMR-0139414



- Organic molecular solids are excellent models for the investigation of superconductivity because the important energy scales can be modified by both chemical and physical tuning.
- In $\kappa\text{-(ET)}_2\text{Cu(SCN)}_2$, magneto-infrared measurements show that intramolecular vibrational modes are involved in the superconducting to normal state transition below T_c .
- In $\beta''\text{-(ET)}_2\text{SF}_5\text{RSO}_3$, anion tuning can be used to modify the hydrogen bonding and alter the charge transfer characteristics.
- We also investigated the dynamics of linear C_{60} polymers; both on-ball distortion and charging effects were assessed.



Education and Human Development

Musfeldt Group, University of Tennessee

- Broad, interdisciplinary training of students in materials spectroscopy
- Close interaction and collaboration with materials design and theory groups
- 14 undergraduates and 3 high school students over a 7 year period.
- ~40% female participation, with one student an African American female.
- Projects in the area of organic superconductivity provide group members with important opportunities at every level of seniority and interest. High school, undergraduate and graduate students as well as postdoctoral researchers have been involved in these projects.

